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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/735,036 | 12/12/2003 | Kenneth D. McKibben | HAYES P23US0 | 2467 |
| 7590 | 05/12/2005 | | EXAMINER | |
| VARNUM, RIDDERING, SCHMIDT & HOWLETT LLP P.O. BOX 352 GRAND RAPIDS, MI 49501 | | | KERNs, KEVIN P | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1725 | |

DATE MAILED: 05/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/735,036 | MCKIBBEN ET AL. | |
| | Examiner | Art Unit | |
| | Kevin P. Kerns | 1725 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 01 April 2005 and 11 April 2005.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1 and 3-6 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1 and 3-6 is/are rejected.
 7) Claim(s) 1 and 5 is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 01 April 2005 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date _____
- 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____.
 5) Notice of Informal Patent Application (PTO-152)
 6) Other: _____.

DETAILED ACTION

Drawings

1. The corrected "marked-up" Figure 1 was received on April 1, 2005. This drawing sheet is objected to since it is denoted by "replacement sheet". Although the applicants' corrections to delete "30" and "58" are correct, they are not be shown in a "replacement" drawing sheet. In the next communication, the applicants are requested to submit Figure 1 as a formal (clean copy) "replacement" sheet to overcome this objection.

Claim Objections

2. Claims 1 and 5 are objected to because of the following informalities: in claim 1, 1st line, replace "said" with "sand" before "cores". In claim 5, 2nd line, delete "the" before "unloader". Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

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under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1 and 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawai (US 3,939,899) in view of Kodama (JP 63-278634).

Kawai discloses a shell molding machine (provided with a heater/burner manifold in the form of setting plate 10 to provide heat to sand cores) and a method of casting and curing sand cores, in which the method includes the steps of filling a blow head car 17 of a movable blow head 18 with sand from hopper 25; moving the blow head 18 (via rails 20 engaging the rollers 17' of blow head car 17) away from the sand hopper 25 and towards a core box (1,1a,2) that is locked (vertically and horizontally) in position by stopper cylinder assembly 33 and locking rods 33', wherein the blow head 18 becomes aligned in position with a blow valve in the form of a piston cylinder assembly 21 provided with a compressed air reservoir, thus filling/blowing sand through blow plate 19 of the blow head car 17 and into the core box (1,1a,2) prior to retracting the blow head 18 and ejecting/separating the cope and drag cores from the core box to a core unloader table 13 (abstract; column 2, lines 25-68; column 3, lines 1-68; column 4, lines 1-53; and Figures 1-4). Kawai does not specifically disclose the use of a vacuum manifold in the shell molding machine.

However, Kodama discloses a supply and recovery system for molding sand, in which the system includes a vacuum pump 2 and attached manifold connected to a

sand suction tube 11 inserted into a sand filled casting flask 4, and the system is operable to recover and return unused sand to a sand hopper (sand storing tank 7), in which the vacuum pump and manifold is advantageous for quickly recovering molding sand after a shaking out process, thus enabling unused sand to be recovered and stored in the sand storing tank for future use (abstract; and Figures 1-3).

It would have been obvious to one of ordinary skill in the art at the time the applicants' invention was made to modify the method of casting and curing sand cores, as disclosed by Kawai, by adding a vacuum pump/manifold, as taught by Kodama, in order to recover molding sand after a shaking out process, thus enabling unused sand to be recovered and stored in the sand storing tank for future use (Kodama; abstract).

Response to Arguments

6. The examiner acknowledges the applicants' amendment and corrected drawing sheet of April 1, 2005, as well as the supplemental oath/declaration of April 11, 2005. The supplemental oath/declaration overcomes prior objections. The corrected drawing sheet (Figure 1) is approved with regard to deletion of "30" and "58" from Figure 1, but a formal drawing sheet for Figure 1 is now requested (see paragraph 1). Claim objections to claims 1 and 5 remain (see paragraph 2). The 35 USC 103(a) rejections based on the Witt reference have been withdrawn due to the applicants' amendments/arguments. The applicants have cancelled claim 2 and incorporated its subject matter into claim 1. Claims 1 and 3-6 are currently under consideration in the application.

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7. Applicants' arguments with respect to claims 1 and 3-6 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kevin P. Kerns whose telephone number is (571) 272-1178. The examiner can normally be reached on Monday-Friday from 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kevin P. Kerns *Kevin Kerns 5/11/05*
Primary Examiner
Art Unit 1725

KPK
kpk
May 11, 2005